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Box PATENT APPLICATION
Assistant Commissioner for Patents
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Re: New Continuation in Part of U.S. Patent Application 09/532,048
Title: CONTENT DISTRIBUTION SYSTEM AND METHOD
Inventors: Tayo AKADIRI, Brian JEPSON, A. Ramaseshan
SADASIV

Sir:

We enclose the following papers for filing in the United States Patent and Trademark Office in connection with the above patent application.

1. Application - 84 pages, including 31 independent claims and 148 claims total.
2. Drawings - 16 sheets of informal drawings (including Figures 1-4, 5A-5C, 6-12).

This application is a continuation-in-part of prior application Serial No. 09/532,048, filed March 21, 2000. This application is being filed under the provisions of 37 C.F.R. §§ 1.53(b) and 1.53(f).

Applicants await notification from the Patent and Trademark Office of the time set for filing the Declaration.

Please accord this application a serial number and filing date.

Assistant Commissioner for Patents
August 2, 2000
Page 2

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JAB:jl
Enclosures

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UNITED STATES PATENT APPLICATION

OF

Tayo AKADIRI,

Brian JEPSON, and

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FOR

CONTENT DISTRIBUTION SYSTEM AND METHOD

LAW OFFICES

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RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Patent Application No. 09/532,048 for a "CONTENT DISTRIBUTION SYSTEM AND METHOD," which is incorporated herein in its entirety by reference. U.S. Patent Application No. 09/532,048 relies upon and claims priority to Provisional U.S. Patent Application No. 60/155,015, entitled "System For Online Advertising and Other Commerce," filed September 21, 1999, which is incorporated by reference in its entirety into that application, No. 09/532,048. This application also relies upon and claims priority to Provisional U.S. Patent Application No. 60/155,015, which is incorporated by reference in its entirety into this application.

BACKGROUND OF THE INVENTION

A. Field of the Invention

This invention relates generally to content distribution systems and, more particularly, to a system for distributing digital content associated with a container based on a relationship between attributes associated with the digital content and attributes associated with a defined region of the container. The container may constitute, or be included in, any digital transmission, such as a television or radio programming, web pages, and the like.

B. Description of the Related Art

Content generally comprises any kind of text, audible message, and/or visual. Today, content is reduced to bits and bytes for transmission and visual and/or audible output. Content finds its way into our homes via output devices such as televisions (with or without set-top boxes), radios, computer networks (e.g., the Internet), and the like. Content also makes its way into our everyday routine via portable output devices such as pagers, personal digital assistants (PDAs), wireless telephones (e.g., cellular or satellite), and the like.

Generally, content is provided to these output devices based on arrangements made long before the transmission from a source to the output devices. For example, primary content providers such as television stations, radio stations, publishers on the Internet, Internet Service Providers, pager service companies, and other entities that provide a medium or network for transmitting content to an audience enter into agreements with secondary content providers, such as advertisers, to transmit secondary content, such as advertisements at predetermined times, intervals, locations, etc. to all or specific devices.

But secondary content transmission is not limited to advertisements. Other types of secondary content providers also prearrange for the transmission or airing of their content. For example, entities that produce programs (secondary content) for television enter into agreements with television stations and networks (primary content providers) to transmit

specific programs at predetermined times. The same is true for the other forms of entertainment, edutainment, and communication described above.

Providers of primary and secondary content merge their content before delivery to the consumer. These arrangements are often negotiated long before delivery to the consumer and through a labor intensive process. Therefore, at the time of transmission the predetermined cost to the content providers does not necessarily reflect the current level of interest in the secondary or primary content at the time of transmission. For example, a primary content provider may experience an unexpected surge in interest in a particular program at a particular time but the provider may not be able to reap a financial benefit of that additional interest by, for example, charging secondary content providers, such as advertisers accordingly for advertising during the surge. Moreover, prearranged agreements may prevent certain advertisers and content producers from competing effectively for transmission time from the primary content provider.

For example, the barriers for publishing content on the Internet are low. A computer equipped with a communication mechanism such as a modem and telephone connection is nearly all that is necessary to gain access to the Internet. A program called a Web browser, such as the NETSCAPE NAVIGATOR from NETSCAPE Corporation, makes it a simple task to traverse the vast network of information available on the Internet and, specifically, its subpart known as the "World Wide Web."

5 The architecture of the Web follows a conventional client-server model. The terms "client" and "server" are used to refer to a computer's general role as a requester of data (the client) or provider of data (the server). In conventional settings, a Web browser resides in each client and is used to access specially formatted "Web pages" that reside on Internet (Web) servers. Web clients and Web servers communicate using a conventional protocol called "HyperText Transfer Protocol" (HTTP).

10 In operation, a Web browser opens a connection to a Web server and initiates a request for a document using a Uniform Resource Locator (URL). The Web server delivers the requested document, typically in a standard coded format such as the "HyperText Markup Language" (HTML) format. After the document is delivered, the connection is closed. The Web browser renders the document, displaying content or performing a function designated by the document. In this way, the Web server publishes content.

15 With the explosive growth of e-commerce, the Internet is poised to realize its potential as a revolutionary way for businesses to interact with their customers and each other. This potential is evident with the growth of e-commerce as applied to certain business fields such as retailing, advertising, and content syndication. Certain known business methods, and conventional implementations of these methods allow for deployment of each of these fields on the Internet and for primary or secondary content providers to earn revenue for participating

in this market. However, these fields remain artificially disjointed and monolithic in their deployment.

Therefore, there is a need for a system that can combine the diverse area of commerce into a single universally accessible system to all content providers. Such a system not only permits digital content providers to explicitly target consumers and medium, but also it permits primary content providers, such as Web publishers, cellular service providers, and broadcasters, or secondary content providers to maximize their revenues for part of their medium.

SUMMARY OF THE INVENTION

Methods, systems, and articles of manufacture consistent with the present invention overcome the shortcomings of existing systems by providing a marketplace that matches content with containers, which may constitute, or be included in, any digital transmission, such as a television or radio programming, Web pages, and the like. Specifically, the marketplace automatically matches content with containers through a real-time content trading, placement, and distribution system. To do so, attributes associated with the containers are used to identify the available content, and the content fills the containers based on the attributes associated with the content. Trading and placing content within containers enable both content owners and container owners to obtain the full commercial benefit of their content and containers.

In an implementation consistent with the present invention a method for creating vacancies used for trading content is provided. According to this method, a vacancy is defined in a container with associated attributes and information reflecting the attributes is transmitted to a trading floor that locates content to fill the vacancy based on the vacancy attributes.

5 In another implementation consistent with the present invention a method for matching content with a vacancy in a container is provided. According to this method a host provides a notification of a vacancy in a container. The notification contains attributes associated with the vacancy. Content for the vacancy is then located based on the attributes associated with the vacancy, and the host is provided with information corresponding to the content.

10 In another implementation consistent with the present invention, a method for filling a vacancy is provided. According to this method a host receives a request from a consumer to obtain a container that contains a vacancy and information including content corresponding to a content provider is obtained from a server and then transmitted to the consumer.

15 In another implementation consistent with the present invention, a method for receiving content stream on a consumer computer is provided. The stream contains digital content from a content provider and information from a vacancy provider. The method involves transmitting a request to a vacancy provider for content stream, locating at least one content provider to provide the digital content in the content stream, and receiving the content stream with the

content and the information supplied by the tenant and the vacancy provider at the consumer computer.

In another implementation consistent with the present invention, a method for trading content and vacancies on a network is provided. The method involves permitting vacancy providers to submit vacancy offerings for a container. Each vacancy offering includes attributes associated with a vacancy. The method also involves permitting content providers to submit attributes associated with content. Once submitted, vacancy offerings and content are traded so that of selected content can be distributed.

Systems and articles of manufacture corresponding to these implementations are also provided within the scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate an implementation of the invention and, together with the description, serve to explain the advantages and principles of the invention. In the drawings,

Figure 1 depicts a content trading, placement, and distribution system consistent with the principles present invention;

Figure 2 depicts an exemplary vacancy and Snap-In consistent with the principles of

the present invention;

Figure 3 depicts an exemplary content distribution system suitable for practicing methods and systems consistent with the present invention;

Figure 4 depicts a more detailed diagram of the consumer computer depicted in Fig. 3;

Figure 5A depicts a more detailed diagram of the host server depicted in Fig. 3;

Figure 5B depicts a more detailed diagram of the tenant server depicted in Fig. 3;

Figure 5C depicts a more detailed diagram of the service provider server depicted in Fig. 3;

Figure 6 depicts a flow chart of the steps performed when creating a vacancy in a manner consistent with the principles of the present invention;

Figure 7 depicts a flow chart of the steps performed when creating a Snap-In in a manner consistent with the principles of the present invention;

Figure 8 depicts a flow chart of the steps performed by the service provider server when trading vacancies and Snap-Ins in a manner consistent with the principles of the present invention;

Figure 9 depicts a flow chart of the steps performed by the data processing system when inserting a Snap-In into a vacancy in a manner consistent with the principles of the

present invention;

Figure 10 depicts an exemplary Web page for use in a manner consistent with the present invention;

Figure 11 depicts an example embodiment suitable for methods and systems consistent with the present invention; and

Figure 12 depicts an alternative content distribution system suitable for practicing methods and systems consistent with the present invention.

DETAILED DESCRIPTION

The following detailed description of the invention refers to the accompanying drawings. Although the description includes exemplary implementations, other implementations are possible, and changes may be made to the implementations described without departing from the spirit and scope of the invention. The following detailed description does not limit the invention. Instead, the scope of the invention is defined by the appended claims. Wherever possible, the same reference numbers will be used throughout the drawings and the following description to refer to the same or like parts.

Overview

Methods, systems, and articles of manufacture consistent with the present invention

provide a marketplace that matches and trades units of content and containers, and places content within containers. Such methods, systems, and articles of manufacture enable primary content providers to fill these containers in real time using a content trading and placement process facilitated by the marketplace. This enables Web publishers, information providers, and broadcasters to receive content for their containers in real time and obtain value-based returns for permitting secondary content providers to fill these containers with content. Similarly, this marketplace approach enables secondary content providers to distribute content in real time into suitable containers, and to obtain value-based returns for permitting Web publishers, information providers, and broadcasters to use these units of content.

Vacancies are spacial or temporal regions that may constitute or be included in containers. Vacancies hold content created by a content provider. In one example, a container such as a Web page, may contain vacancies in the form of spacially defined regions within the Web page. In another example, a container such as an audio program may contain a vacancy in the form of temporally defined regions designated for embedding second-party content, such as advertising or public service announcements. In yet another example a container, such as a text message intended for devices, such as pagers, cellular phones, or PDAs, may contain a vacancy in the form of a region designated for a unit of embedded data sourced from a secondary content provider, such as personalized news, sports, or advertising.

A consumer may receive the container as a primary content stream. Any vacancies in the container are open to accept suitable content from a suitable secondary content provider. The marketplace may locate a suitable secondary content provider whose content stream is transmitted to the consumer within any designated portions (vacancies) within the primary content stream.

A vacancy is a region owned by a vacancy provider that can be leased for any use to any secondary content provider for any number of use-units (e.g., impressions) at any monetary price (or in exchange for any other instrument of value within the marketplace). A vacancy provider may be a Web publisher, broadcaster, information provider, or any other entity that makes vacancies available to secondary content providers. A vacancy provider may allocate permanent or temporary occupancy by secondary digital content providers based on content/context suitability and pricing considerations that are negotiated by the marketplace. In other words, the vacancy provider may dictate the type of content needed for allocated regions within the vacancy provider's medium. The suitability, pricing matching is negotiated in a marketplace at a service provider based on the vacancy attributes that the vacancy provider attaches to the vacancy and attributes that a secondary content provider attaches to a particular unit of content.

Vacancy providers create vacancies with attributes, such as dynamic attributes and

static attributes. These attributes identify each vacancy by type and the desired secondary content to fill the vacancy. Static attributes may include required secondary content, such as teenage advertising, a virtual storefront, a syndicated cartoon, an audio stream, the physical size and location of the vacancy, time and date qualifiers on the vacancy, or classification of the vacancy. Dynamic attributes are defined as attributes that can change or be derived at any time, or attributes that are evaluated just-in-time as the vacancy is offered. For example, in the case of a Web publisher, a vacancy may include dynamic attributes, such as real-time Web site traffic. When traffic is low at the Web site, the cost to fill the vacancy may be four cents per impression, however when Web traffic is high, the cost may be six cents per impression. Another type of dynamic attribute is keywords. For example, a keyword entered by a consumer during a search may be linked to a dynamic attribute of a vacancy within the search-results container and used to help locate suitable secondary content for that vacancy. That is, if a consumer searches with the keyword "car," content relating to cars may be used to fill the vacancy located on the search results Web page. Another example of a dynamic attribute is consumer demographics.

A "Snap-In" comprises a unit of digital content and meta-data, with associated attributes that is available for filing a vacancy. Snap-Ins include context-keyed advertising, virtual storefronts, or any syndicated content. Secondary digital content providers, also known as

tenants, create Snap-Ins to plug into vacancies. A tenant may set the attributes for each Snap-In to target or match suitable vacancies. The marketplace fills vacancies with Snap-Ins by matching and trading them based on the attributes of both the Snap-Ins and the vacancies.

The marketplace comprises a number of components, such as a vacancy editor, host software, adapter software, Snap-In editor software, and a service provider. A vacancy editor enables vacancy providers to create vacancies and define attributes for those vacancies. Host software transmits and receives, in real-time, information between a vacancy and the service provider. Adapter software, specific for the type of content and environment, merges received content into vacancies and containers. A Snap-In editor enables secondary digital content providers to create Snap-Ins for vacancies, and define attributes for the Snap-Ins. The service provider facilitates the process of filling vacancies with Snap-Ins by providing a real-time content trading, placement, and distribution system.

One of the many applications of the marketplace is in the field of advertising. The marketplace system provides a number of benefits over traditional advertising systems. First, the marketplace enables digital content providers to dynamically seek the most favorable vacancy based on real-time data. Digital content providers create robust campaigns that match digital content in real-time to any targeted criteria, including full consumer profiles, contextual content, and search keywords. Using the marketplace, digital content is placed in real time on

any suitable medium that draws a mass audience finding the best audience hour-by-hour, or even minute-by-minute, as traffic changes.

Second, the marketplace enables vacancy providers to set up any number of single-or-multi-purpose precisely-sized vacancies within their containers. These vacancies are then automatically filled with a suitable Snap-In. The vacancy contains attributes that give the vacancy provider complete control over the digital content that appears in their site's vacancy. Because these vacancies may be traded using real-time auctions, vacancy providers achieve maximum value from their minute-to-minute audience.

Third, the marketplace provides a real-time electronic marketplace for trading virtual real estate. Software agents mediate the trading of vacancies and Snap-Ins. These agents allow digital content providers to trade or participate in auctions without any user intervention. That is, the agents automate the trading/auction process by bidding on vacancies in real-time as the true audience of the primary content fluctuates. Each software agent may be preprogrammed by a Snap-in provider or a vacancy provider to achieve a desired result.

Figure 1 depicts a content trading, placement, and distribution system 100 suitable for practicing methods and systems consistent with the present invention. Distribution system 100 comprises a vacancy provider 102, a Snap-In provider 104, a service provider 106, and a consumer 108. Vacancy provider 102 creates and transmits vacancies to service provider 106.

Again, a vacancy may comprise or be included in a Web page, audio/video stream, or any other digital content. Vacancy provider 102 also transmits, in real-time, attributes to service provider 106. Snap-In provider 104 creates and provides Snap-Ins to service provider 106. Like the vacancy, a Snap-In may be included in a Web page, audio/video stream, or any other digital content and may transmit, in real-time, attributes to service provider 106. When a consumer 108 requests, or is an intended recipient of, content containing a vacancy from a vacancy provider 102, service provider 106 matches a suitable Snap-In with the vacancy in real-time and transmits the Snap-In to vacancy provider 102. Providers 102, 104 may then transmit content and other information to consumer 108, including the vacancy-containing content from vacancy provider 102 and the content of the Snap-In from content provider 104 to be embedded within the vacancy region. Alternatively, both the content and information from providers 102 and 104 may be directed through service provider 106 to consumer 108.

Figure 2 depicts an exemplary vacancy and Snap-In consistent with the principles of the present invention. Vacancy 202 is created by vacancy provider 102 using a vacancy editor. Depending upon the implementation and configuration of distribution system 100, the vacancy editor may be configured differently. For example, in the case of Web pages, a vacancy editor may be a well-known WYSIWYG page-editing program with a vacancy editor program plug-in. In a different implementation, a vacancy editor may be an audio editor that edits audio

streams, or a PCS editor that includes text content intended for broadcasts. Associated with vacancy 202 are static attributes 204 and dynamic attributes 206. Each time a consumer 108 requests information that contains vacancy 202, vacancy provider 102 transmits the vacancy attributes 404, 406 to service provider 106, either by direct means built into vacancy provider 102's software or by host software that senses or filters the information requested from vacancy provider 102.

A Snap-In 210 is created by a Snap-In editor software, such as a Web-based interface, or other interface, consisting of software that prompts the user to enter links to the Snap-In content, or the Snap-In content 211 itself, as well as the Snap-In's associated attributes 212. The Snap-In editor software may be remotely located at service provider 106. In that case, the Snap-In editor software may be a Web wizard program that helps a user create Snap-Ins using the Web. Depending upon the implementation and configuration of distribution system 100, the Snap-In editor program may be configured differently. For example, in the case of Web pages, a Snap-In editor software may be a Web page(s) with dialogs and controls that allows the user to enter links to the Snap-In content, or to create the Snap-In content itself, as well as to edit the Snap-Ins's associated attributes. In a different implementation, such as for broadcast or PCS applications, the Snap-In editor software may contain content information and attributes suitable for that application. Snap-In 210 is designed to fill vacancy 202 and contains attributes

212 to help locate a vacancy in real-time.

System Components

Figure 3 depicts an exemplary data processing system 300 suitable for practicing methods and systems consistent with the present invention. Data processing system 300 comprises a consumer computer 310, a host server 320, and a tenant server 330 connected to a service provider server 340 via a network 350, such as the Internet. A consumer uses computer 310 to request and submit information to host server 320. A digital content provider, such as an advertiser or a virtual storefront owner, uses tenant server 330 to create and submit Snap-Ins to service provider server 340. A Web publisher uses host server 320 to create and submit vacancies to service provider server 340.

Figure 4 depicts a more detailed diagram of consumer computer 310, which contains a memory 420, a secondary storage device 430, a central processing unit (CPU) 440, an input device 450, a video display 460, and an output device 470. Memory 420 includes browser 422 that allows consumers to interact with host server 320 by transmitting and receiving files, such as Web pages. A Web page may include images or textual information to provide an interface to receive ratings and requests for evaluations from a user using hypertext markup language (HTML), Java or other techniques. An example of browsers suitable for use with methods and

systems consistent with the present invention are the Netscape Navigator browser, from Netscape Communications Corp., and the Internet Explorer browser, from Microsoft Corp.

As shown in Figure 5A, host server 320 includes a memory 502, a secondary storage device 510, a CPU 512, an input device 514, and a video display 516. Memory 502 includes vacancy editor 504, host software 506, and adapter software 508. Vacancy editor 504 enables primary content providers to create vacancies for their containers. Host software 506 transmits information associated with vacancies to a service provider server 340 each time a consumer computer 310 requests a container that contains a vacancy 202. Host software 506 broadcasts information corresponding to the vacancy, such as vacancy attributes 204, 206 to service provider server 340. In a Web environment, a Web software, such as the APACHE Web software, may also be included in host software 506 to transmit and receive Web pages. Adapter software 508 merges content with vacancies as the content is delivered to host software 506 from either tenant server 330 or service provider server 340.

One potential configuration involves an in-process web server extension or filter that cooperates with the host web server to perform the adapter functions described above.

In an alternative configuration, the adapter and host software resides on a separate (proxy) server. The proxy server is configured to intercept all requests to the web server by, for example, listening on port 80, which is the port that web requests typically come in and on

which the web server is usually listening. The web server is therefore configured to listen on a different port, such as port 81. (In one configuration, both the web server and the proxy server processes are implemented on a single computer, although they may be distributed on different machines.) The proxy server is also configured to forward incoming requests to the web server for a response. After the web server returns a response to the proxy server, the adapter and host software on the proxy performs the functions described above.

As shown in Figure 5B, tenant server 330 includes a memory 520, a secondary storage device 526, a CPU 528, an input device 530, and a video display 532. Memory 520 includes tenant software 522 and adapter software 524. Tenant software 522 communicates with service provider server 340 and may include Web software. Adapter software 524 records consumer followthrough activity. For example, when a consumer connects to a tenant server 330 associated with the Snap-In, tenant software 522 may notify service provider server 340 of the consumer's selections and activity.

As shown in Figure 5C, service provider server 340 includes a memory 540, a secondary storage device 548, a CPU 556, an input device 558, and a video display 560. Memory 540 includes trading engine 542, interface software 544, and Snap-In editor software 546. Trading engine 542 provides a virtual trading floor where vacancies are filled with Snap-Ins based on any Snap-In's attributes and vacancy attributes. Trading engine 542 may trade,

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5 auction vacancies and Snap-Ins. Interface software 544 provides access to various features of the service provider, including trading, preferences, and configuration features. Interface software 544 may be a Web page, Application Program Interfaces (API), or other input interface. An API is a set of routines, protocols, or tools for communicating with software applications. APIs provide efficient access to trading engine 542 without the need for additional software to interface with the engine. Snap-In editor software 546 helps a secondary content provider create and deliver Snap-Ins to a service provider server 340 (e.g., a Web interface). One skilled in the art will appreciate that Snap-In editor software 546 may be located at tenant server 330.

10 Secondary storage device 548 contains a database 550 that includes a tenant file 552 and a host file 554. Tenant file 552 holds information relating to Snap-Ins, such as attributes indicated by secondary content providers. Host file 554 holds information relating to various vacancies, such as static attributes and dynamic attributes.

15 Vacancy Creation Process

As shown in Figure 6, vacancy creation process is initiated, for example, by displaying a vacancy editor software 504 (step 602). For example, a Web publisher may use vacancy editor software 504 to graphically define a vacancy region within Web pages. An exemplary

Web page 1000 with a vacancy is depicted in Figure 10. Web page 1000 contains vacancies 1002.

Next, a primary content provider may create a vacancy for a container located at host server 320 (step 604). For example, a Web publisher may define and link a vacancy region 1002 to Web page 1000. Finally, the vacancy attributes associated with vacancy 1002 are transmitted to interface software 544 on service provider server 340 (step 606). The vacancy attributes are stored in host file 554 and are accessible to digital content providers for viewing. The attributes are also used during the trading process described below. That is, the attributes indicate the suitability or desirability of vacancy 1002 to any particular buyer. A vacancy will be matched to suitable second-party content through its attributes, and will have a value in the marketplace based on its attributes. As consumers request vacancy-containing content from host server 320, the vacancy attributes are transmitted through host software 506 to service provider 340. In addition, periodically, vacancy attributes may be updated as traffic conditions change at host server 320. For example, when Web traffic increases at host server 320, host software 506 notifies interface software 544 of the increase.

Snap-In Creation Process

As shown in Figure 7, Snap-In creation process is initiated by accessing Snap-In editor software 546 (e.g., Web wizard software) located on service provider server 340 (step 702).

A secondary content provider may access the service provider's Web page through interface 544. Once accessed, the secondary content provider may use the Web wizard software to create a Snap-In (step 704). Each Snap-In contains attributes as well as digital content. For example, a Snap-In may contain a strategy embodied in a software agent that executes the secondary content provider's bidding/trading strategy for a particular vacancy or vacancy attribute. The software agents may be created to bid aggressively under some conditions or less aggressively for others. For example, the software agent may be defined to bid high when the primary content of the vacancy will be displayed to a large audience, or when the vacancy will be displayed to a target audience, such as teenagers. Software agents may adjust their bids based on dynamic property values of current vacancies. For example, a software agent may contain a comprehensive policy profile, such as targeting or excluding specific vacancy attributes, measuring complex Web-consumer demographics, or even bid for a vacancy when specific individuals are involved. One skilled in the art will appreciate that a vacancy may contain similar strategies as the Snap-Ins. In one implementation the Snap-In may be implemented as an object and the associated software agent is implemented in the object's methods.

Next, the secondary content provider may provide the Snap-In content to a service provider server 340 (step 706). That is, the provider may create, link, or upload content

associated with the Snap-In to a service provider server 340. The secondary content provider may use Snap-In editor software 546 to upload the information to service provider server 340 using interface 544. Finally, attributes associated with the Snap-In may be transmitted to service provider server 340 (step 708). The attributes may be stored in tenant file 552.

Request Process

As shown in Figure 8, request process is initiated by receiving a request to provide content to a consumer (step 802). For example, a request may be for a Web page. Each time browser 422 requests content that contains a vacancy from host server 320, host software 504 transmits information corresponding to the requesting consumer, various vacancy attributes, and any other attributes (e.g., Web server attributes) to service provider server 340 (step 804). The vacancy may be designated for content such as paid or syndicated content. In instances where the vacancy is sold, this information is called a "vacancy offering." For example, host software 504 may transmit any available demographic information regarding the consumer, such as age, physical location, or software. Host software 504 may obtain demographic information by the requesting consumer's network address and domain name. Host software 504 may also obtain demographic information from a profile created for each consumer. That is, host software 504 may require the consumer to login to host server 320 to obtain Web pages from host server 320. Host software 504 may also transmit dynamic vacancy attributes, such

as required content, physical attributes, and cost per impression. Additionally, host software 504 may transmit Web server attributes, such as rating information, or number of viewers. Once the vacancy offering is received at service provider server 340, the vacancy is matched with a suitable Snap-In in accordance to trading preferences of Snap-In providers and vacancies; the transaction is executed.

Next, host server 320 receives the digital content and tracking information from the selected Snap-In from interface software 544 (step 806). Once received, adapter software 508 merges the content with the vacancy and transmits the Snap-In content with digital content and transaction information in place of the vacancy to the requesting consumer (step 808). The digital content may be clickable and contain links to a tenant location, along with various tracking information (described below). For example, the digital content may contain links to a tenant server. If the consumer selects the digital content (step 810), the consumer is connected to the tenant's server (step 812). Tenant software 522 on tenant server 330 listens for requests that include tracking information from host server 320. When the tracking information is identified, tenant software 522 transmits the requested information and at the same time tenant software 522 notifies service provider server 340 of the request along with any additional selection activity (step 814). For example, by maintaining tracking information in a Uniform Resource Locator (URL), for each Web page a consumer views at tenant server

330, a Web software notifies service provider server 340. Additionally, if a consumer purchases an item through tenant server 330, tenant server 330 notifies service provider server 340 as well.

Alternatively, or additionally, the tracking information may be embedded within a file local to the consumer, or cookies and later read by a software when that consumer connects to tenant server 330.

Trading Process

As shown in Figure 9, trading process is initiated by locating a Snap-In for a vacancy based on matching attributes and/or market mechanisms (step 902). Trading engine 542 compares attributes for a vacancy with those of a Snap-In. A vacancy may be seeking syndicated content, whereas a Snap-In may be a particular type of syndicated content. A market mechanism is any type of method (e.g., buy, sell, or barter) used to locate Snap-Ins and vacancies. For example, trading engine 542 may use a Vickrey auction. The Vickrey auction allows a content provider to adjust their bidding strategy after each round. One skilled in the art will appreciate that other methods may be used, such as second price field bid auctions. Alternatively, or additionally, static trading may be used in that a preset Snap-In fills a preset vacancy. That is, the vacancy may indicate that only predetermined Snap-Ins (e.g., content from company "X") may be used to fill the vacancy. In a static system, service provider server

340 may serve as an auditing server, providing statistical information regarding how many times the preset Snap-In has filled the vacancy.

Regardless of the market mechanism used to locate Snap-Ins and vacancies, trading engine 542 executes transactions between Snap-In providers and vacancy providers (step 904).

For example, trading engine 542 may execute transactions using software agents to determine which among the eligible Snap-Ins will be placed in the vacancy in real-time. A software agent may be programmed to increase the price per impression up to a predetermined amount. Thus, if the initial bid (e.g., 5 cents) is a failed transaction, the software agent may be programmed to increase the price per impression (e.g., 15 cents). One skilled in the art will appreciate that the software agents may work with other parameters, such as number of units, geographic location, or attributes, such as size of a region, or audio length of the region. One skilled in the art will appreciate that other methods may be used to create winning strategies, such as neural network based agents, or rule based induction learning.

Once a transaction has been executed, trading engine 542 notifies Snap-In provider (secondary content provider) as well as vacancy provider (primary content provider) of the transaction details (step 906). Trading engine 542 may also notify the respective agents of the providers. For example, trading engine 542 may notify an agent to increase the bid in a next transaction. Both vacancy providers and Snap-In providers may indicate a maximum bid level.

One skilled in the art will appreciate that trading engine 542 may also directly notify the providers of the failed transaction. In this case, the provider may determine how to handle future transactions.

Once a Snap-In has been selected for the vacancy, trading engine 542 transmits Snap-In information and vacancy information to host software 504, which in turn notifies the adapter software 508, which in turn merges the content. For example, the notification may include a URL link to the digital content, or the actual digital content. The URL link may also include additional tracking information. That is, the URL link may contain parameters used by the tenant Web site to inform service provider server 340. Each time the consumer visits different tenant Web pages, the URL link may be used to transmit information to service provider server 340 so that service provider server 340 obtains a complete record of the consumer's activity at the tenant Web site. Thus, when a consumer clicks on the digital content in the vacancy and is connected to the tenants Web site, service provider server 340 may still track the consumer activity.

Alternatively, trading engine 542 may simply provide host server 320 with the actual digital content. For example, if the tenant included with the Snap-In a GIF image (e.g., a banner advertisement), instead of a URL link, the GIF image is forwarded to host server 320 for display. Also at this point, trading engine 542 may log the completed transaction and debit

or credit the tenant and host an appropriate amount.

Figure 11 depicts an advertising system 1100 consistent with the present invention. System 1100 contains a host server 1102 capable of generating additional revenue from vacancies 1104 on containers 1103. Tenant server 1105 contains Snap-In 1106 created to fill vacancies 1104. Trading server 1107 matches vacancies 1104 with Snap-In 1106.

A primary digital content provider may use a vacancy editor software to graphically define vacancy 1104 in container 1103. The provider also defines the vacancy's properties, such as the availability in units of 10,000 impressions for sale in December only, at a price of 4 cents per impression, keywords typed by a consumer in real-time, such as "teenager." The provider then uses the host software to submit vacancy 1104 to trading server 1107. When consumer traffic increases at host server 1102, the host software notifies trading server 1107 of the increased traffic and to update the dynamic properties of vacancy 1104.

A secondary digital content provider may use a Snap-In editor software, such as a Web wizard, to designate specific Snap-Ins 1106 to be delivered to specific consumer profiles. The Snap-In may be a banner advertisement, a virtual storefront, or any other digital content. The digital content provider may also use the appropriate software to indicate a preference for teenage consumers during peak Web traffic for a Snap-In 1106.

Each time a consumer 1108 requests a container 1103 with vacancy 1104, the host

software notifies trading server 1107, which initiates a suitable trade. Trading server 1107 matches Snap-In 1106 with vacancy 1104 (described above), and then transmits the Snap-In to host server 1102. The adapter software then merges the content with the vacancy 1104. Host server 1102 transmits container 1103 with Snap-In 1106 in place of vacancy 1104.

The primary content provider immediately receives revenue from secondary digital content providers who have created the Snap-In 1106.

Alternative Content Distribution System

Figure 12 depicts an alternative content distribution system suitable for practicing methods and systems consistent with the present invention. Fig. 12 illustrates a network 1260 that contains a vacancy provider 1262 (the primary content distributor), a snap-in provider 1264, and a service provider with a trading floor 1266. Provider 1262 communicates with content consumers, such as mobile devices 1290, through communication infrastructure 1280. For example, as part of the process in which vacancy provider (and primary content distributor) 1262 broadcast content to mobile devices 1290, adapter 1268 detects the vacancy and notifies the service provider 1266 via host software 1267. Service provider 1266 obtains suitable matching content from snap-in content provider 1264 and transmits the Snap-In via the host software 1267 back to adapter 1268 at the vacancy provider. Adapter 1268 merges the Snap-In content with the primary distributor's content in a format understandable to a mobile device

1290 (such as mobile IP, or PCS) and then transmits the content.

The operation of system 1260 is substantially the same as that described above except for the adapter software which is specialized to this distribution method, and the output device for receiving digital content, which in this example is a mobile device. A similar configuration may be used to provide digital content in a manner consistent with the present invention to other output devices like televisions and radios.

Conclusion

As explained, systems consistent with the present invention overcome the shortcomings of existing systems by providing a virtual marketplace that matches a unit of secondary digital content (Snap-In) with a defined region (vacancy) within primary content, such as a Web site.

Although aspects of the present invention are described as being stored in memory, one skilled in the art will appreciate that these aspects may be stored on or read from other computer readable media, such as secondary storage devices, like hard disks, floppy disks, and CD-ROM; a carrier wave received from a network like the Internet; or other forms of ROM or RAM. Additionally, although specific components and programs of consumer computer 110, and various servers have been described, one skilled in the art will appreciate that these may contain additional or different components or programs.

5 The foregoing description of an implementation of the invention has been presented for purposes of illustration and description. It is not exhaustive and does not limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practicing of the invention. For example, vacancies and Snap-Ins may be represented as objects including methods and functions. Moreover the described implementation includes software but the present invention may be implemented as a combination of hardware and software or in hardware alone. The invention may be implemented with both object-oriented and non-object-oriented programming systems.

WHAT WE CLAIM IS:

1. A method for creating vacancies for distributing content, comprising the steps, executed in a data processing system, of:

defining a vacancy, wherein vacancy attributes are associated with the vacancy; and

transmitting information reflecting the attributes to a trading floor that locates content to fill the vacancy based on the vacancy attributes.

2. The method of claim 1, wherein defining a vacancy further includes the step of including dynamic attributes in the vacancy attributes that are determined when the vacancy is transmitted to the trading floor.

3. The method of claim 1, wherein defining a vacancy further includes the step of including static attributes in the vacancy attributes that are determined before the trading floor locates content suitable to fill the vacancy.

4. The method of claim 1, wherein the content is a virtual storefront, syndicated content, or an advertisement.

5. A method for matching content with a vacancy, comprising the steps, executed in a data processing system, of:

receiving from a host a notification of a vacancy, wherein the notification contains a set of attributes associated with the vacancy;

locating content based on the attributes associated with the vacancy; and

providing the host with information corresponding to the content.

6. The method of claim 5, further comprising the step of merging the located content with a container associated with the vacancy.

7. The method of claim 5, wherein locating content further includes the step of trading the vacancy among a plurality of content providers, wherein each provider is associated with particular content.

8. The method of claim 7 wherein each content provider is associated with a corresponding set of attributes, and said particular content is associated with a corresponding set of attributes, and wherein a content provider is included in a transaction when the set of attributes associated with the content provider and said particular content matches the attributes

associated with the vacancy.

9. The method of claim 8 wherein said transaction is a buy, sell, or barter transaction negotiated through an auction.

10. The method of claim 5, wherein locating content further includes using a software agent to match the content and the vacancy attributes, wherein each software agent contains a set of policies reflecting behavior associated with the content.

11. The method of claim 10, wherein the set of policies is based on desired attributes of a vacancy.

12. The method of claim 10, wherein the policies include audience levels, dimensions, or trading price constraints.

13. The method of claim 10, wherein the software agent is associated with a vacancy provider and includes desired attributes of content providers.

14. The method of claim 13, wherein the policies include content dimensions or type, or trading price constraints.

15. The method of claim 5, wherein providing the host with information further includes the step of including in the information a link to the content, wherein the link contains information corresponding to a provider associated with the content.

16. The method of claim 5, wherein providing the host with information further includes the step of including in the information content corresponding to a provider associated with the content.

17. The method of claim 5, wherein each vacancy contains attributes including static context properties, dynamic context properties, pricing information, date and time, or availability constraints.

18. A method for filling a vacancy, comprising the steps, executed in a data processing system, of:

receiving a request at a primary content provider from a consumer to obtain a primary content container that contains a vacancy;

5 locating in real-time at least one secondary content provider using a market mechanism to provide the secondary content for the primary content container; and

receiving information corresponding to a secondary content provider from a secondary content provider, wherein the information includes secondary content; and

10 transmitting information corresponding to the secondary content and the primary content container to the consumer.

19. The method of claim 18, wherein transmitting information further includes transmitting a connection to the secondary content to the consumer.

20. The method of claim 18, further including the steps of:

obtaining real-time attributes based on statistics associated with the primary content provider, characteristics associated with the consumer, or predetermined attributes; and

selecting secondary content to transmit to the consumer based on the attributes or

characteristics.

21. The method of claim 18, further comprising:
detecting when the consumer selects the secondary content.
22. The method of claim 18, further comprising:
detecting when the primary content provider receives a consumer request for the
primary content container that contains a vacancy.
23. The method of claim 22, further comprising:
transmitting information to a server when the primary content provider receives a
consumer request for the primary content container.
24. The method of claim 21, wherein detecting when the consumer selects the secondary
content further includes the steps of:
including tracking information in the secondary content; and
providing the data processing system with information associated with the tracking
information when the consumer selects the secondary content.

25. The method of claim 21, wherein detecting when the consumer selects the secondary content further includes the steps of:

including tracking information within a storage format local to the consumer; and
providing the data processing system with information associated with the tracking

information when the consumer selects the secondary content.

26. The method of claim 25, wherein providing the data processing system with information associated with the tracking information further includes the steps of:

detecting tracking information when the consumer requests the secondary content from
the secondary content provider; and

transmitting information corresponding to the tracking information to a data processing
system.

27. A method for receiving content on a consumer computer, wherein the content is from a primary content provider and a secondary content provider, comprising the steps of:

receiving a request from a consumer for content;

transmitting a request to a server to locate at least one secondary content provider to provide the content to the consumer using real-time market mechanisms; and

transmitting the content with the content from the primary content provider and the secondary content provider and the information supplied by the tenant and the vacancy provider at the consumer computer.

28. The method of claim 27, wherein receiving a request further includes the step of receiving characteristics associated with the consumer.

29. A content selection and distribution method for trading content and vacancies on a network, comprising:

permitting each one of a plurality of primary content providers to submit information associated with vacancies in containers.

5 permitting each one of a plurality of secondary content providers to submit information associated with secondary content;

trading vacancies and units of the secondary content; and

selectively distributing the units of secondary content with corresponding containers to consumers based on results of the trading step.

30. The method of claim 29, wherein attributes of the secondary content and attributes of the vacancies include trading strategies, and wherein the trading step further includes the step of applying the trading strategy for each unit of secondary content and each vacancy during the trading step.

31. The method of claim 30 wherein trading may be executed by an auction.

32. A method for distributing digital content, comprising:
determining whether a vacancy is associated with particular digital content;
identifying filler digital content capable of filling the vacancy based on attributes
associated with the vacancy; and
providing digital content composed of the digital content filled with the filler digital
content.

33. The method of claim 32, wherein identifying filler digital content further includes the
steps of:
transmitting a request to a server to locate filler digital content; and
receiving a response from the server, wherein the response includes filler content
located using real-time market mechanisms.

34. The method of claim 32, wherein the filler content is a virtual storefront, syndicated
content, or an advertisement.

35. A method for distributing digital content, comprising:

determining in real time whether suitable secondary digital content is available for transmission based on attributes associated with a primary transmission stream; and

including in real time the secondary digital content within the primary transmission stream at a particular point based on the attributes.

36. The method of claim 35, wherein the determining step includes the step:

permitting automated negotiation among representatives of primary and secondary digital content.

37. The method of claim 35, further comprising:

detecting when a consumer selects the secondary digital content.

38. The method of claim 35, further comprising:

detecting when a primary content provider receives a consumer request for the secondary digital content

39. The method of claim 38, further comprising:

receiving information when the primary content provider receives a consumer request for the secondary digital content.

40. The method of claim 37, wherein detecting when the consumer selects the secondary digital content further includes the steps of:

including tracking information in the secondary digital content; and
receiving information associated with the tracking information when the consumer selects the secondary digital content.

41. The method of claim 37, wherein detecting when the consumer selects the secondary digital content further includes the steps of:

including tracking information within a storage format local to the consumer; and
receiving information associated with the tracking information when the consumer selects the secondary digital content.

42. A method for distributing digital content, comprising:

receiving a request for a container;

when it is determined that a vacancy is defined within the container, identifying a unit of secondary content capable of filling the vacancy based on a relationship between attributes associated with the vacancy and attributes associated with the content; and

transmitting the identified unit of secondary content with the container.

43. The method of claim 42, wherein the step of identifying a unit of secondary content capable of filling the vacancy, comprises:

notifying a plurality of secondary content providers of the request, wherein the notified content providers are selected from a set of secondary content providers based on attributes associated with the secondary providers and the secondary content, and the attributes of the vacancy.

44. The method of claim 42, further comprising:

notifying agents associated with a plurality of secondary content providers of the request, wherein the notified agents are selected from a group of agents based on the attributes associated with the secondary providers and the content, and the attributes of the vacancy;

notifying an agent associated with a primary content provider, wherein the primary content provider provides the vacancy; and

permitting the notified agents of the secondary content providers and the agent associated with the primary content provider to negotiate within an electronic marketplace to fill the vacancy.

Variable	Mean	SD	Min	Max
Age	34.5	10.2	21	55
Gender	0.5	0.5	0	1
Marital status	0.6	0.5	0	1
Education	12.5	1.5	9	16
Income	1500	500	500	3000
Health status	0.8	0.2	0	1
Smoking status	0.3	0.5	0	1
Alcohol consumption	0.2	0.4	0	1
Exercise frequency	0.5	0.5	0	1
Stress level	0.7	0.3	0	1
Sleep quality	0.6	0.4	0	1
Work satisfaction	0.5	0.5	0	1
Life satisfaction	0.6	0.4	0	1

45. A memory for storing data for access by a process being executed by a processor, the memory comprising:

a structure for maintaining information identifying a vacancy and corresponding attributes, wherein a trading process matches the vacancy with suitable secondary content using the vacancy attributes and attributes associated with secondary content.

46. A memory for storing data for access by a process being executed by a processor, the memory comprising:

a structure for maintaining information identifying a unit of secondary content and corresponding attributes, wherein a trading process matches the unit of secondary content with a suitable vacancy using the attributes of the unit of secondary content and attributes associated with the vacancy.

47. A memory for storing data for access by a process being executed by a processor, the memory comprising:

a structure for maintaining (i) information identifying at least one vacancy and corresponding attributes, and (ii) information identifying at least one unit of secondary content and corresponding attributes, wherein a trading process matches the vacancy with a suitable

[illegible]

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48. A method for receiving content on a consumer computer, wherein the content is from a primary content provider and a secondary content provider, comprising the steps of:

transmitting a request for a primary content container associated with a primary content provider to a primary content provider, wherein the container contains secondary content associated with a secondary content provider, and wherein the secondary content is located in real-time using a market mechanism; and

receiving information corresponding to the secondary content and the primary content container.

49. The method of claim 48, wherein transmitting a request further includes the step of transmitting characteristics associated with the consumer.

50. A method for creating units of content for vacancies, comprising the steps, executed in a data processing system, of:

defining units of content, wherein content attributes are associated with each unit of content; and

transmitting information reflecting the attributes to a trading floor that fills vacancies with units of content based on vacancy attributes.

51. The method of claim 50, wherein a unit of content is a virtual storefront, syndicated content, or an advertisement.

52. The method of claim 50, wherein defining units of content further includes the step of using software to create the units of content.

53. The method of claim 50, further comprising the step of providing the trading floor with the units of content.

54. A system for creating vacancies for distributing content comprising:

means for defining a vacancy, wherein vacancy attributes are associated with the vacancy; and

means for transmitting information reflecting the attributes to a trading floor that locates content to fill the vacancy based on the vacancy attributes.

55. The system of claim 54, wherein means for defining a vacancy further includes means for including dynamic attributes in the vacancy attributes that are determined when the vacancy is transmitted to the trading floor.

56. The system of claim 54, wherein means for defining a vacancy further includes means for including static attributes in the vacancy attributes that are determined before the trading floor locates content suitable to fill the vacancy.

57. The system of claim 54, wherein the content is a virtual storefront, syndicated content, or an advertisement.

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58. A system for matching content with a vacancy, comprising:

means for receiving from a host a notification of a vacancy, wherein the notification contains a set of attributes associated with the vacancy;

means for locating content based on the attributes associated with the vacancy; and

means for providing the host with information corresponding to the content.

59. The system of claim 58, further comprising means for merging the located content with a container associated with the vacancy.

60. The system of claim 58, wherein the means for locating content further includes means for trading the vacancy among a plurality of content providers, wherein each provider is associated with particular content.

61. The system of claim 60, wherein each content provider is associated with a corresponding set of attributes, and said particular content is associated with a corresponding set of attributes, and wherein a content provider is included in a transaction when the set of attributes associated with the content provider and said particular content matches the attributes associated with the vacancy.

62. The system of claim 61 wherein said transaction is a buy, sell, or barter transaction negotiated through an auction.

63. The system of claim 58, further including a software agent that matches the content and the vacancy attributes, wherein each software agent contains a set of policies reflecting behavior associated with the content.

64. The system of claim 63, wherein the set of policies is based on desired attributes of a vacancy.

64. The system of claim 63, wherein the policies include audience levels, dimensions, or trading price constraints.

65. The system of claim 63, wherein the software agent is associated with a vacancy provider and includes desired attributes of content providers.

66. The system of claim 65, wherein the policies include content dimensions or type, or trading price constraints.

67. The system of claim 58, wherein the means for providing the host with information further includes means for including in the information a link to the content, wherein the link contains information corresponding to a provider associated with the content.

68. The system of claim 58 wherein the means for providing the host with information further includes means for including in the information content corresponding to a provider associated with the content.

69. The system of claim 58, wherein each vacancy contains attributes including static context properties, dynamic context properties, pricing information, date and time, or availability constraints.

Variable	Mean	SD	Min	Max
Age (years)	34.2	10.5	18	65
Gender (male/female)	15/15			
Education (years)	12.5	1.2	10	16
Occupation (white/blue)	10/5			
Marital status (single/married)	10/5			
Income (€1000/month)	1.5	0.8	0.5	3.0
Health status (good/poor)	10/5			
Smoking status (smoker/non-smoker)	5/10			
Alcohol consumption (g/day)	10	20	0	100
Physical activity (hours/week)	2.5	1.5	0	10
Stress level (low/high)	5/10			
Sleep quality (good/poor)	10/5			
Dietary intake (kcal/day)	2000	500	1500	2500
Body mass index (kg/m²)	24.5	3.5	18	35
Blood pressure (mmHg)	120/80	10/10	90/60	160/100
Heart rate (b/min)	70	10	50	100
Cholesterol (mmol/L)	5.0	1.0	3.0	7.0
Glucose (mmol/L)	5.5	1.0	3.0	8.0
Hemoglobin (g/L)	14.0	1.0	12.0	16.0
White blood cells (x10³/L)	7.0	1.0	5.0	10.0
Platelets (x10³/L)	200	20	150	250
Protein (g/L)	65	5	50	80
Albumin (g/L)	40	3	30	50
Bilirubin (mg/dL)	1.0	0.5	0.5	2.0
Aspartate aminotransferase (U/L)	20	10	10	40
Alanine aminotransferase (U/L)	15	10	5	35
Gamma-glutamyl transferase (U/L)	30	20	10	60
Creatinine (mg/dL)	1.0	0.2	0.8	1.2
Urea nitrogen (mg/dL)	10	2	8	12
Sodium (mmol/L)	135	5	130	140
Potassium (mmol/L)	4.0	0.5	3.5	4.5
Calcium (mg/dL)	9.0	0.5	8.5	9.5
Magnesium (mg/dL)	1.5	0.2	1.2	1.8
Phosphorus (mg/dL)	3.0	0.5	2.5	3.5
Zinc (mg/dL)	0.8	0.1	0.6	1.0
Copper (mg/dL)	0.9	0.1	0.7	1.1
Selenium (mg/dL)	0.05	0.01	0.03	0.07
Iron (mg/dL)	0.5	0.1	0.3	0.7
Cobalt (mg/dL)	0.01	0.001	0.005	0.02
Nickel (mg/dL)	0.001	0.0001	0.0005	0.002
Manganese (mg/dL)	0.001	0.0001	0.0005	0.002
Vanadium (mg/dL)	0.001	0.0001	0.0005	0.002
Chromium (mg/dL)	0.001	0.0001	0.0005	0.002
Molybdenum (mg/dL)	0.001	0.0001	0.0005	0.002
Cadmium (mg/dL)	0.001	0.0001	0.0005	0.002
Lead (mg/dL)	0.001	0.0001	0.0005	0.002
Mercury (mg/dL)	0.001	0.0001	0.0005	0.002
Barium (mg/dL)	0.001	0.0001	0.0005	0.002
Strontium (mg/dL)	0.001	0.0001	0.0005	0.002
Yttrium (mg/dL)	0.001	0.0001	0.0005	0.002
Zirconium (mg/dL)	0.001	0.0001	0.0005	0.002
Antimony (mg/dL)	0.001	0.0001	0.0005	0.002
Bismuth (mg/dL)	0.001	0.0001	0.0005	0.002
Fluorine (mg/dL)	0.001	0.0001	0.0005	0.002
Boron (mg/dL)	0.001	0.0001	0.0005	0.002
Silicon (mg/dL)	0.001	0.0001	0.0005	0.002
Chlorine (mg/dL)	0.001	0.0001	0.0005	0.002
Phosphorus (mg/dL)	0.001	0.0001	0.0005	0.002
Sulfur (mg/dL)	0.001	0.0001	0.0005	0.002
Oxygen (mg/dL)	0.001	0.0001	0.0005	0.002
Nitrogen (mg/dL)	0.001	0.0001	0.0005	0.002
Carbon (mg/dL)	0.001	0.0001	0.0005	0.002
Hydrogen (mg/dL)	0.001	0.0001	0.0005	0.002
Helium (mg/dL)	0.001	0.0001	0.0005	0.002
Lithium (mg/dL)	0.001	0.0001	0.0005	0.002
Sodium (mg/dL)	0.001	0.0001	0.0005	0.002
Potassium (mg/dL)	0.001	0.0001	0.0005	0.002
Calcium (mg/dL)	0.001	0.0001	0.0005	0.002
Magnesium (mg/dL)	0.001	0.0001	0.0005	0.002
Phosphorus (mg/dL)	0.0			

means for transmitting information corresponding to the secondary content and the primary content container to the consumer.

72. The system of claim 70, further comprising:

means for selecting secondary content to transmit to the consumer based on the

attributes or characteristics.

73. The system of claim 70, further comprising:

means for detecting when the consumer selects the secondary content.

74. The system of claim 70, further comprising:

means for detecting when the primary content provider receives a consumer request for the primary content container that contains a vacancy.

75. The system of claim 74, further comprising:

a server; and

means for transmitting information to the server when the primary content provider receives a consumer request for the primary content container.

76. The system of claim 73, wherein the means for detecting further comprises:

means for including tracking information in the secondary content; and

means for providing the data processing system with information associated with the

tracking information when the consumer selects the secondary content.

77. The system of claim 73, wherein the means for detecting further comprises:

means for including tracking information within a storage format local to the consumer;

and

means for providing the data processing system with information associated with the tracking information when the consumer selects the secondary content.

78. The system of claim 77, wherein the means for providing the data processing system with information further comprises:

means for detecting tracking information when the consumer requests the secondary content from the secondary content provider; and

means for transmitting information corresponding to the tracking information to a data processing system.

79. A system for receiving content on a consumer computer, wherein the content is from a primary content provider and a secondary content provider, comprising:

means for receiving a request from a consumer for content;

means for transmitting a request to a server to locate at least one secondary content provider to provide the content to the consumer using real-time market mechanisms; and

means for transmitting the content with the content from the primary content provider and the secondary content provider and the information supplied by the tenant and the vacancy provider at the consumer computer.

80. The system of claim 79, wherein the means for receiving a request further comprises means for receiving characteristics associated with the consumer.

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81. A system for distributing digital content, comprising:
- means for determining whether a vacancy is associated with particular digital content;
 - means for identifying filler digital content capable of filling the vacancy based on attributes associated with the vacancy; and
 - means for providing digital content composed of the digital content filled with the filler digital content.
82. The system of claim 81, wherein the means for identifying filler digital content further comprises:
- means for transmitting a request to a server to locate filler digital content; and
 - means for receiving a response from the server, wherein the response includes filler content located using real-time market mechanisms.
83. The system of claim 81, wherein the filler content is a virtual storefront, syndicated content, or an advertisement.

[illegible]

89. The system of claim 88, wherein the means for detecting further comprises:

means for receiving information associated with the tracking information when the consumer selects the secondary digital content.

means for including tracking information within a storage format local to the consumer;

means for receiving information associated with the tracking information when the consumer selects the secondary digital content.

91. A system for distributing digital content, comprising:

means for receiving a request for a container;

means for identifying a unit of secondary content capable of filling the vacancy based on a relationship between attributes associated with the vacancy and attributes associated with the content; and

means for transmitting the identified unit of secondary content with the container.

92. The system of claim 91, wherein the means for identifying a unit of secondary content capable of filling the vacancy, comprises:

means for notifying a plurality of secondary content providers of the request, wherein the notified content providers are selected from a set of secondary content providers based on attributes associated with the secondary providers and the secondary content, and the attributes of the vacancy.

93. The system of claim 91, further comprising:

means for notifying agents associated with a plurality of secondary content providers of the request, wherein the notified agents are selected from a group of agents based on the attributes associated with the secondary providers and the content, and the attributes of the

[illegible]

means for permitting the notified agents of the secondary content providers and the agent associated with the primary content provider to negotiate within an electronic marketplace to fill the vacancy.

94. A system for receiving content on a consumer computer, wherein the content is from a primary content provider and a secondary content provider, comprising the steps of:

means for transmitting a request for a primary content container associated with a primary content provider to a primary content provider, wherein the container contains secondary content associated with a secondary content provider, and wherein the secondary content is located in real-time using a market mechanism; and

means for receiving information corresponding to the secondary content and the primary content container.

95. The system of claim 94, wherein the means for transmitting a request further comprises means for transmitting characteristics associated with the consumer.

96. A system for creating units of content for vacancies, comprising:

means for defining units of content, wherein content attributes are associated with each unit of content; and

means for transmitting information reflecting the attributes to a trading floor that fills vacancies with units of content based on vacancy attributes.
97. The system of claim 96, wherein a unit of content is a virtual storefront, syndicated content, or an advertisement.
98. The system of claim 96, wherein the means for defining units of content further comprises means for using software to create the units of content.
99. The system of claim 96, further comprising means for providing the trading floor with the units of content.
100. The system of claim 97, wherein the trading floor auctions the units of content and the vacancies.

101. A computer readable medium for controlling a data processing system to perform a method for creating vacancies for distributing content executed in a data processing system, the computer readable medium comprising:

a defining module for defining a vacancy, wherein vacancy attributes are associated with the vacancy; and

a transmitting module for transmitting information reflecting the attributes to a trading floor that locates content to fill the vacancy based on the vacancy attributes.

102. The computer readable medium of claim 101, wherein the defining module further comprises an including module for including dynamic attributes in the vacancy attributes that are determined when the vacancy is transmitted to the trading floor.

103. The computer readable medium of claim 101, wherein the defining module further comprises an including module for including static attributes in the vacancy attributes that are determined before the trading floor locates content suitable to fill the vacancy.

104. The computer readable medium of claim 101, wherein the content is a virtual storefront, syndicated content, or an advertisement.

105. A computer readable medium for controlling a data processing system to perform a method for matching content with a vacancy in a data processing system, the computer readable medium comprising:

a receiving module for receiving from a host a notification of a vacancy, wherein the notification contains a set of attributes associated with the vacancy;

a locating module for locating content based on the attributes associated with the vacancy; and

a providing module for providing the host with information corresponding to the content.

106. The computer readable medium of claim 105, further comprising a merging module for merging the located content with a container associated with the vacancy.

107. The computer readable medium of claim 105, wherein the locating module further trades the vacancy among a plurality of content providers, wherein each provider is associated with particular content.

108. The computer readable medium of claim 107, wherein each content provider is associated with a corresponding set of attributes, and said particular content is associated with a corresponding set of attributes, and wherein a content provider is included in a transaction when the set of attributes associated with the content provider and said particular content matches the attributes associated with the vacancy.

109. The computer readable medium of claim 108, wherein said transaction is a buy, sell, or barter transaction negotiated through an auction.

110. The computer readable medium of claim 105, wherein the locating module further comprises a software agent module for matching the content and the vacancy attributes, wherein each software agent contains a set of policies reflecting behavior associated with the content.

111. The computer readable medium of claim 110, wherein the set of policies is based on desired attributes of a vacancy.

117. The computer readable medium of claim 105, wherein each vacancy contains attributes including static context properties, dynamic context properties, pricing information, date and time, or availability constraints.

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118. A computer readable medium for controlling a data processing system to perform a method for filling a vacancy in a data processing system, the computer readable medium comprising:

a receiving module for receiving a request at a primary content provider from a consumer to obtain a primary content container that contains a vacancy;

a locating module for locating in real-time at least one secondary content provider using a market mechanism to provide the secondary content for the primary content container; and

a receiving module for receiving information corresponding to a secondary content provider from a secondary content provider, wherein the information comprises secondary content; and

a transmitting module for transmitting information corresponding to the secondary content and the primary content container to the consumer.

119. The computer readable medium of claim 118, wherein the transmitting module further transmits a connection to the secondary content to the consumer.

120. The computer readable medium of claim 118, further comprising:

an obtaining module for obtaining real-time attributes based on statistics associated with the primary content provider, characteristics associated with the consumer, or predetermined attributes; and

a selecting module for selecting secondary content to transmit to the consumer based on the attributes or characteristics.

121. The computer readable medium of claim 118, further comprising:

a detecting module for detecting when the consumer selects the secondary content.

122. The computer readable medium of claim 118, further comprising:

a detecting module for detecting when the primary content provider receives a consumer request for the primary content container that contains a vacancy.

123. The computer readable medium of claim 122, further comprising:

a transmitting module for transmitting information to a server when the primary content provider receives a consumer request for the primary content container.

124. The computer readable medium of claim 121, wherein the detecting module further

comprises:

an including module for including tracking information in the secondary content; and
a providing module for providing the data processing system with information associated with the tracking information when the consumer selects the secondary content.

125. The computer readable medium of claim 121, wherein the detecting module further comprises:

an including module for including tracking information within a storage format local to the consumer; and

a providing module for providing the data processing system with information associated with the tracking information when the consumer selects the secondary content.

126. The computer readable medium of claim 125, wherein the providing module further comprises:

a detecting module for detecting tracking information when the consumer requests the secondary content from the secondary content provider; and

a transmitting module for transmitting information corresponding to the tracking information to a data processing system.

127. A computer readable medium for controlling a data processing system to perform a method for receiving content on a consumer computer in a data processing system, wherein the content is from a primary content provider and a secondary content provider, the computer readable medium comprising:

a receiving module for receiving a request from a consumer for content;

a transmitting module for transmitting a request to a server to locate at least one secondary content provider to provide the content to the consumer using real-time market mechanisms; and

a transmitting module for transmitting the content with the content from the primary content provider and the secondary content provider and the information supplied by the tenant and the vacancy provider at the consumer computer.

128. The computer readable medium of claim 127, wherein the receiving module further receives characteristics associated with the consumer.

129. A computer readable medium for controlling a data processing system to perform a content selection and distribution method for trading content and vacancies on a network in a data processing system, the computer readable medium comprising:

a module that permits each one of a plurality of primary content providers to submit information associated with vacancies in containers, and that permits each one of a plurality of secondary content providers to submit information associated with secondary content; and

a module that trades vacancies and units of the secondary content and that selectively distributing the units of secondary content with corresponding containers to consumers based on results of the trade.

130. The computer readable medium of claim 129, wherein attributes of the secondary content and attributes of the vacancies include trading strategies, and wherein the module that trades further comprises a module that applies the trading strategy for each unit of secondary content and each vacancy during the trading step.

131. The computer readable medium of claim 130 wherein trading may be executed by an auction.

132. A computer readable medium for controlling a data processing system to perform a method for distributing digital content in a data processing system, the computer readable medium comprising:

a determining module for determining whether a vacancy is associated with particular digital content;

a identifying module for identifying filler digital content capable of filling the vacancy based on attributes associated with the vacancy; and

a providing module for providing digital content composed of the digital content filled with the filler digital content.

133. The computer readable medium of claim 132, wherein the identifying module further comprises:

a transmitting module for transmitting a request to a server to locate filler digital content; and

a receiving module for receiving a response from the server, wherein the response comprises filler content located using real-time market mechanisms.

134. The computer readable medium of claim 132, wherein the filler content is a virtual

Variable	Mean	SD	Min	Max
Age	34.5	10.2	21	55
Gender	Male	Female		
Marital status	Married	Single		
Education	High school	College		
Occupation	Manager	Worker		
Income	Low	High		
Health status	Good	Poor		
Smoking status	Smoker	Non-smoker		
Alcohol consumption	Regular	Occasional		
Exercise frequency	Regular	Occasional		
Stress level	Low	High		
Sleep quality	Good	Poor		
Dietary habits	Healthy	Unhealthy		
Family size	Small	Large		
Religious beliefs	Religious	Secular		
Political views	Conservative	Liberal		
Travel frequency	Regular	Occasional		
Pet ownership	Yes	No		
Home ownership	Owner	Renter		
Vehicle ownership	Yes	No		
Internet usage	Regular	Occasional		
Mobile phone usage	Regular	Occasional		
Smartphone usage	Regular	Occasional		
Tablet usage	Regular	Occasional		
Wearable device usage	Regular	Occasional		
Cloud storage usage	Regular	Occasional		
Virtual reality usage	Regular	Occasional		
Augmented reality usage	Regular	Occasional		
Artificial intelligence usage	Regular	Occasional		
Blockchain usage	Regular	Occasional		
Cryptocurrency usage	Regular	Occasional		
Smart home usage	Regular	Occasional		
Wearable health usage	Regular	Occasional		
Smart car usage	Regular	Occasional		
Smart city usage	Regular	Occasional		
Smart grid usage	Regular	Occasional		
Smart power usage	Regular	Occasional		
Smart water usage	Regular	Occasional		
Smart waste usage	Regular	Occasional		
Smart security usage	Regular	Occasional		
Smart communication usage	Regular	Occasional		
Smart transportation usage	Regular	Occasional		
Smart energy usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		
Smart society usage	Regular	Occasional		
Smart governance usage	Regular	Occasional		
Smart infrastructure usage	Regular	Occasional		
Smart services usage	Regular	Occasional		
Smart products usage	Regular	Occasional		
Smart experiences usage	Regular	Occasional		
Smart lifestyle usage	Regular	Occasional		
Smart culture usage	Regular	Occasional		
Smart economy usage	Regular	Occasional		
Smart politics usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		
Smart society usage	Regular	Occasional		
Smart governance usage	Regular	Occasional		
Smart infrastructure usage	Regular	Occasional		
Smart services usage	Regular	Occasional		
Smart products usage	Regular	Occasional		
Smart experiences usage	Regular	Occasional		
Smart lifestyle usage	Regular	Occasional		
Smart culture usage	Regular	Occasional		
Smart economy usage	Regular	Occasional		
Smart politics usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		
Smart society usage	Regular	Occasional		
Smart governance usage	Regular	Occasional		
Smart infrastructure usage	Regular	Occasional		
Smart services usage	Regular	Occasional		
Smart products usage	Regular	Occasional		
Smart experiences usage	Regular	Occasional		
Smart lifestyle usage	Regular	Occasional		
Smart culture usage	Regular	Occasional		
Smart economy usage	Regular	Occasional		
Smart politics usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		
Smart society usage	Regular	Occasional		
Smart governance usage	Regular	Occasional		
Smart infrastructure usage	Regular	Occasional		
Smart services usage	Regular	Occasional		
Smart products usage	Regular	Occasional		
Smart experiences usage	Regular	Occasional		
Smart lifestyle usage	Regular	Occasional		
Smart culture usage	Regular	Occasional		
Smart economy usage	Regular	Occasional		
Smart politics usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		
Smart society usage	Regular	Occasional		
Smart governance usage	Regular	Occasional		
Smart infrastructure usage	Regular	Occasional		
Smart services usage	Regular	Occasional		
Smart products usage	Regular	Occasional		
Smart experiences usage	Regular	Occasional		
Smart lifestyle usage	Regular	Occasional		
Smart culture usage	Regular	Occasional		
Smart economy usage	Regular	Occasional		
Smart politics usage	Regular	Occasional		
Smart environment usage	Regular	Occasional		

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135. A computer readable medium for controlling a data processing system to perform a method for distributing digital content in a data processing system, the computer readable medium comprising:

a determining module for determining in real time whether suitable secondary digital content is available for transmission based on attributes associated with a primary transmission stream; and

an including module for including in real time the secondary digital content within the primary transmission stream at a particular point based on the attributes.

136. The computer readable medium of claim 135, wherein the determining module further comprises:

a permitting module for permitting automated negotiation among representatives of primary and secondary digital content.

137. The computer readable medium of claim 135, further comprising:

a detecting module for detecting when a consumer selects the secondary digital content.

138. The computer readable medium of claim 135, further comprising:

a detecting module for detecting when a primary content provider receives a consumer request for the secondary digital content

139. The computer readable medium of claim 138, further comprising:

a receiving module for receiving information when the primary content provider receives a consumer request for the secondary digital content.

140. The computer readable medium of claim 137, wherein the detecting module further comprises

an including module for including tracking information in the secondary digital content;

and

a receiving module for receiving information associated with the tracking information when the consumer selects the secondary digital content.

141. The computer readable medium of claim 137, wherein the detecting module further comprises:

an including module for including tracking information within a storage format local to the consumer; and

[illegible]

142. A computer readable medium for controlling a data processing system to perform a method for distributing digital content in a data processing system, the computer readable medium comprising:

a receiving module for receiving a request for a container;

an identifying module for module for determining that when a vacancy is defined within the container, identifying a unit of secondary content capable of filling the vacancy based on a relationship between attributes associated with the vacancy and attributes associated with the content; and

a transmitting module for transmitting the identified unit of secondary content with the container.

143. The computer readable medium of claim 142, wherein the identifying module comprises:

a notifying module for notifying a plurality of secondary content providers of the request, wherein the notified content providers are selected from a set of secondary content providers based on attributes associated with the secondary providers and the secondary content, and the attributes of the vacancy.

144. The computer readable medium of claim 142, further comprising:

a notifying module for notifying agents associated with a plurality of secondary content providers of the request, wherein the notified agents are selected from a group of agents based on the attributes associated with the secondary providers and the content, and the attributes of the vacancy;

a second notifying module for notifying an agent associated with a primary content provider, wherein the primary content provider provides the vacancy; and

a permitting module for permitting the notified agents of the secondary content providers and the agent associated with the primary content provider to negotiate within an electronic marketplace to fill the vacancy.

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145. A computer readable medium for controlling a data processing system to perform a method for creating units of content for vacancies in a data processing system, the computer readable medium comprising:

a defining module for defining units of content, wherein content attributes are associated with each unit of content; and

a transmitting module for transmitting information reflecting the attributes to a trading floor that fills vacancies with units of content based on vacancy attributes.

146. The computer readable medium of claim 145, wherein a unit of content is a virtual storefront, syndicated content, or an advertisement.

147. The computer readable medium of claim 145, wherein the defining module further uses software to create the units of content.

148. The computer readable medium of claim 145, further comprising a providing module for providing the trading floor with the units of content.

ABSTRACT

Methods, systems, and articles of manufacture consistent with the present invention overcome the shortcomings of existing systems by providing an electronic marketplace that matches units of content from secondary content providers with suitable vacancies from primary content providers. Vacancies may constitute, or be included in, any digital transmission containers, such as a television or radio programming, Web pages, and the like. Specifically, the electronic marketplace automatically matches content offered by secondary content providers with vacancies offered by primary content providers thus filling the vacancies in these containers through a real-time content trading, placement, and distribution system. To do so, attributes associated with the vacancies and with the units of secondary content are used to trade and match suitable vacancies with suitable content. This invention enables both secondary content owners and vacancy owners (primary content providers) to obtain the full commercial benefit of their secondary content and containers.

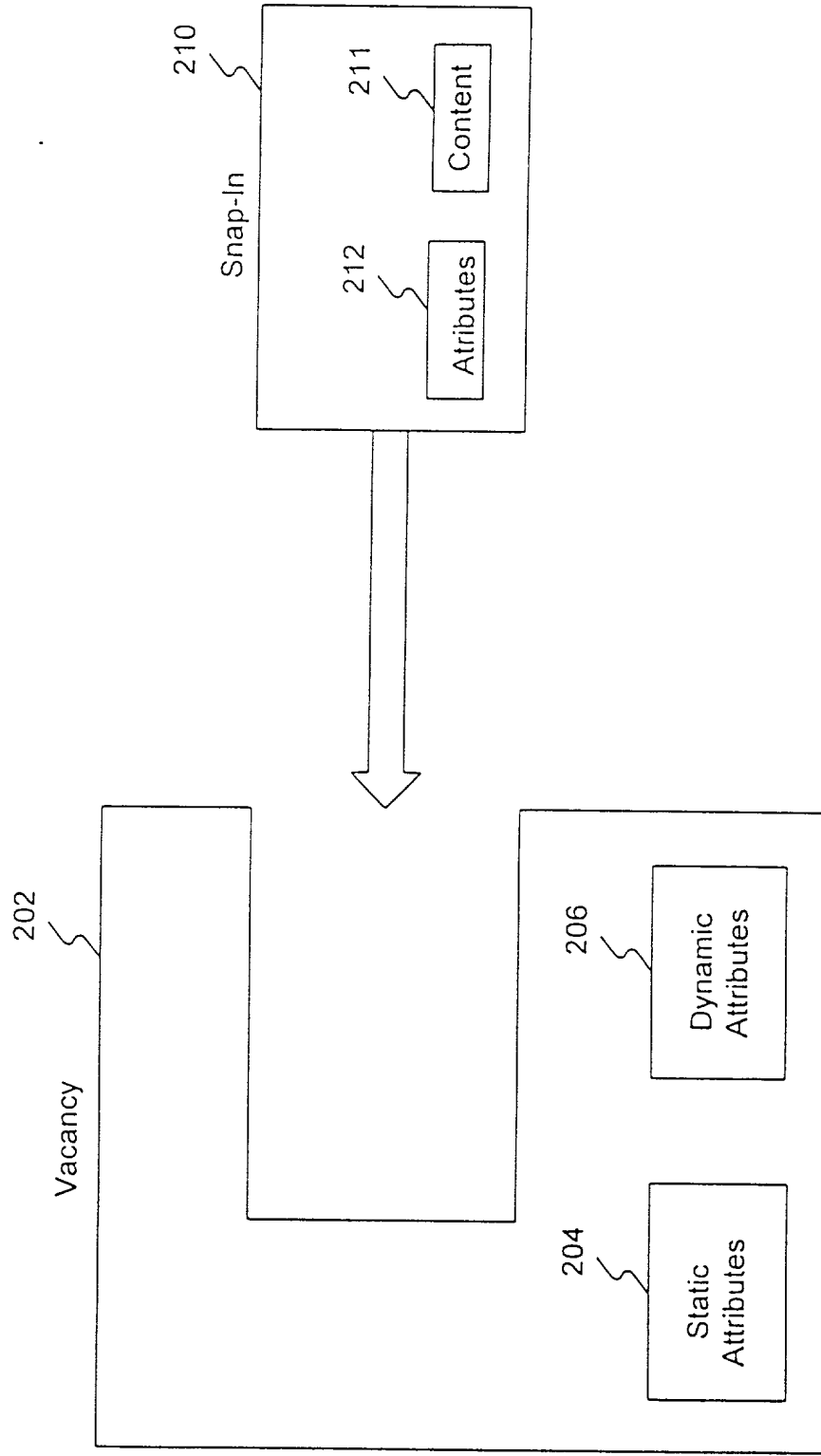


Fig. 2

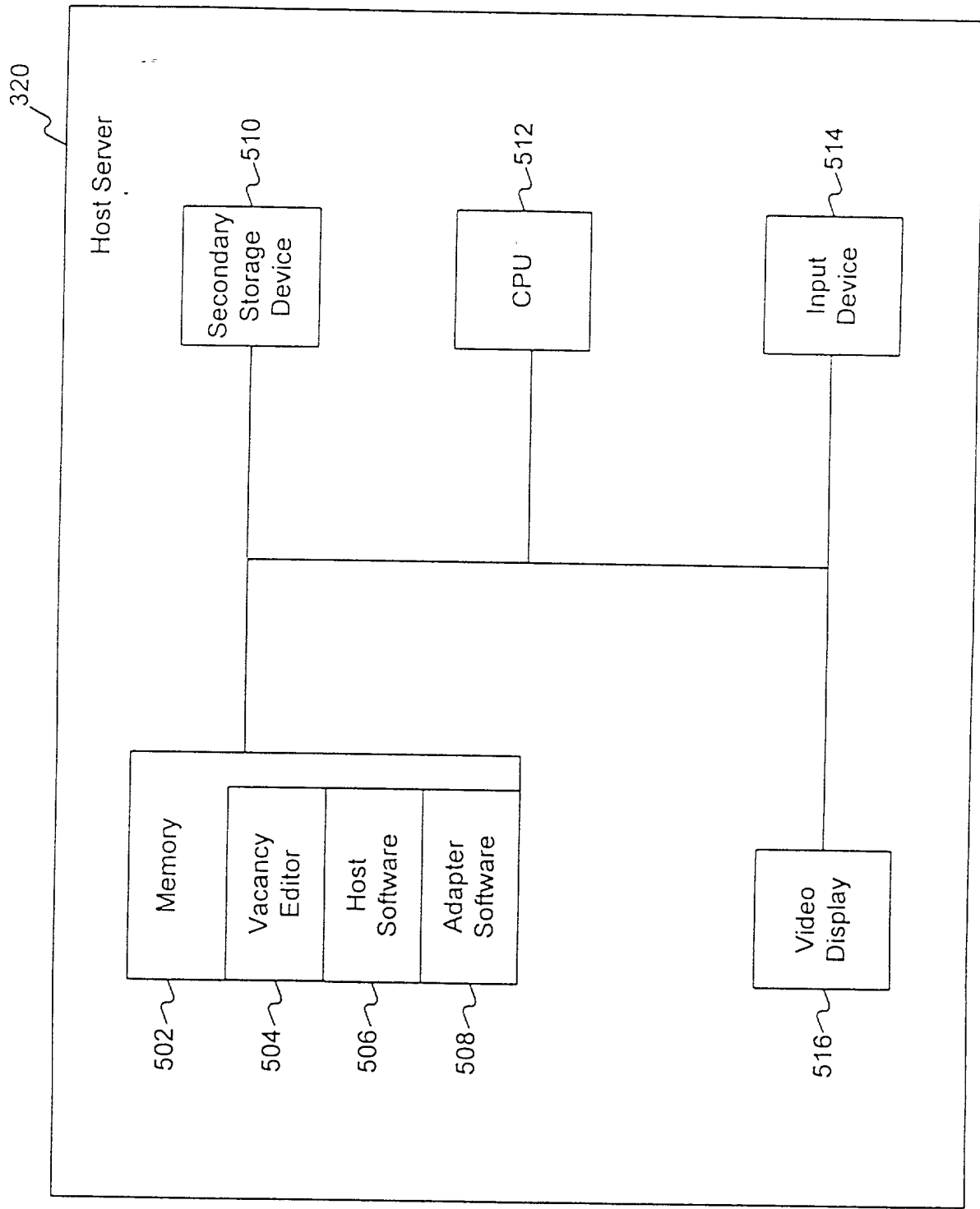


Fig. 5A

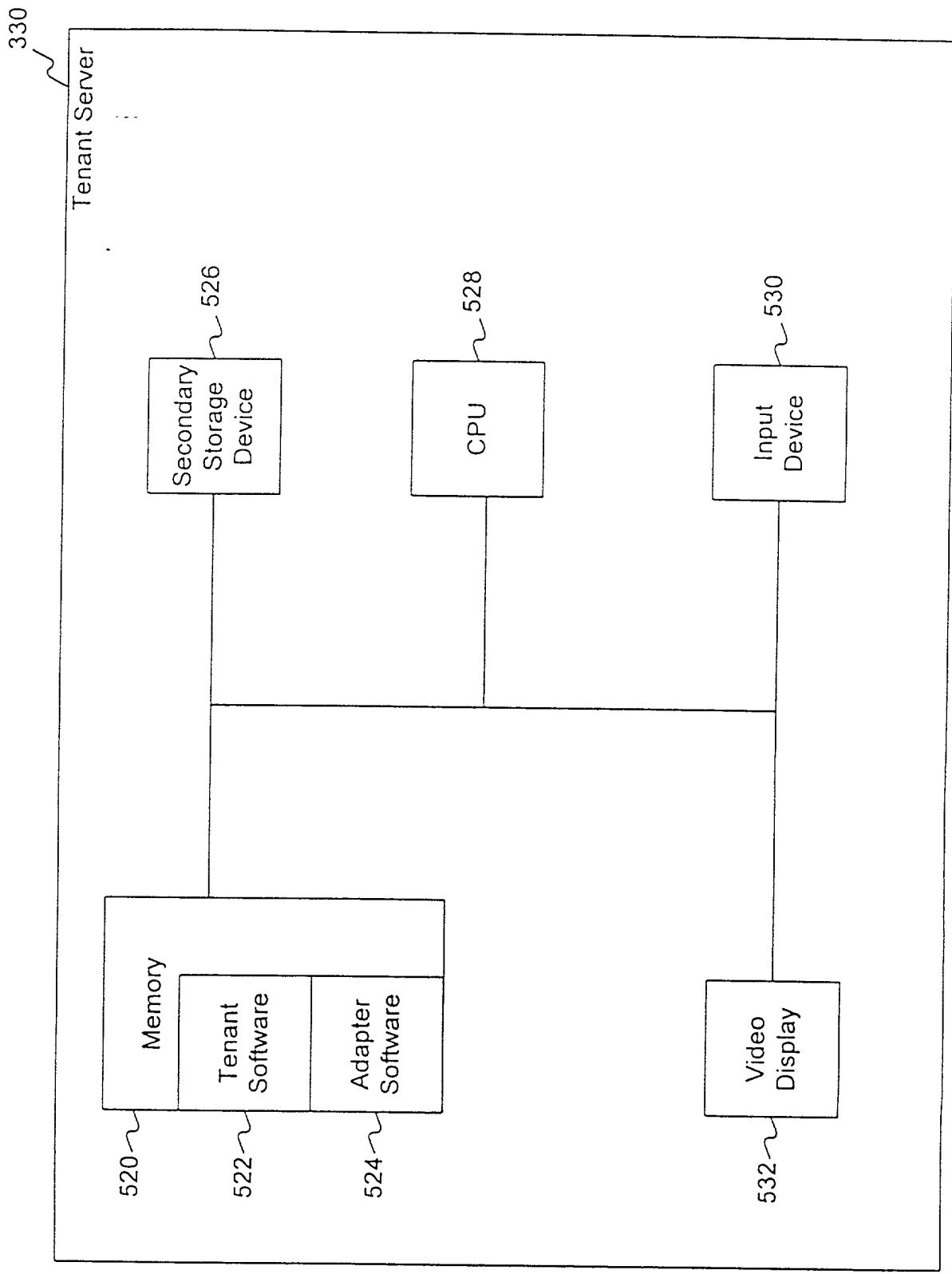


Fig. 5B

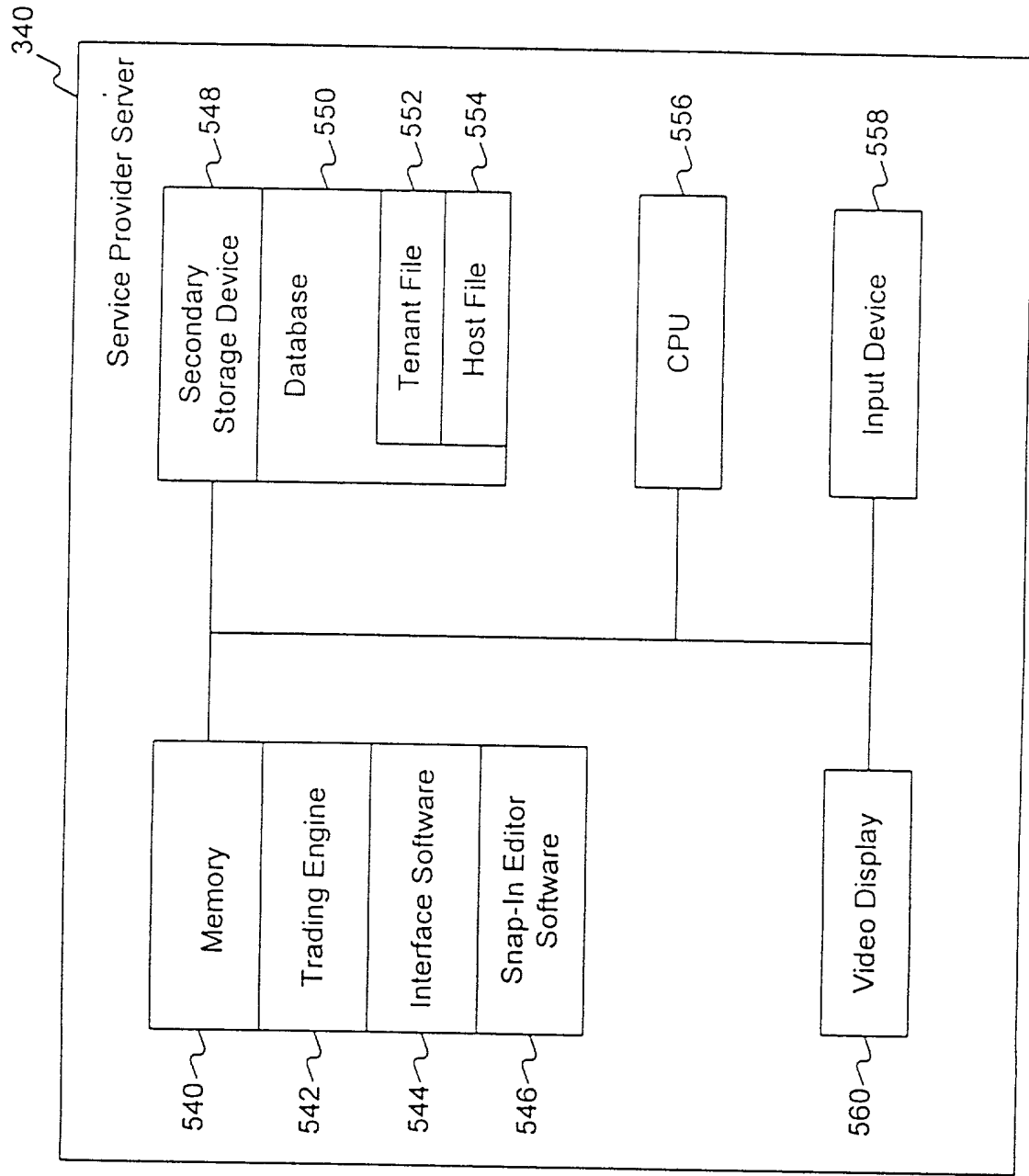


Fig. 5C

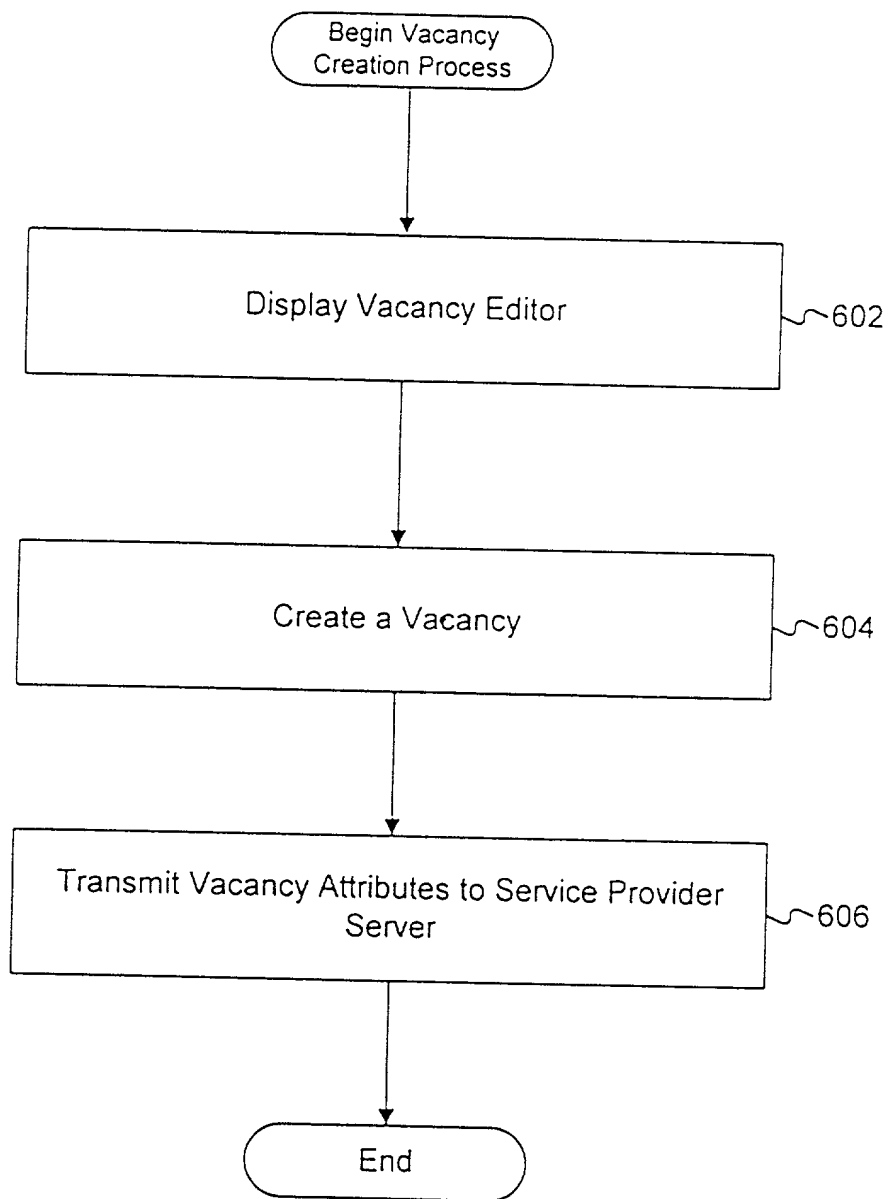


Fig. 6

Begin Snap-In Creation Process

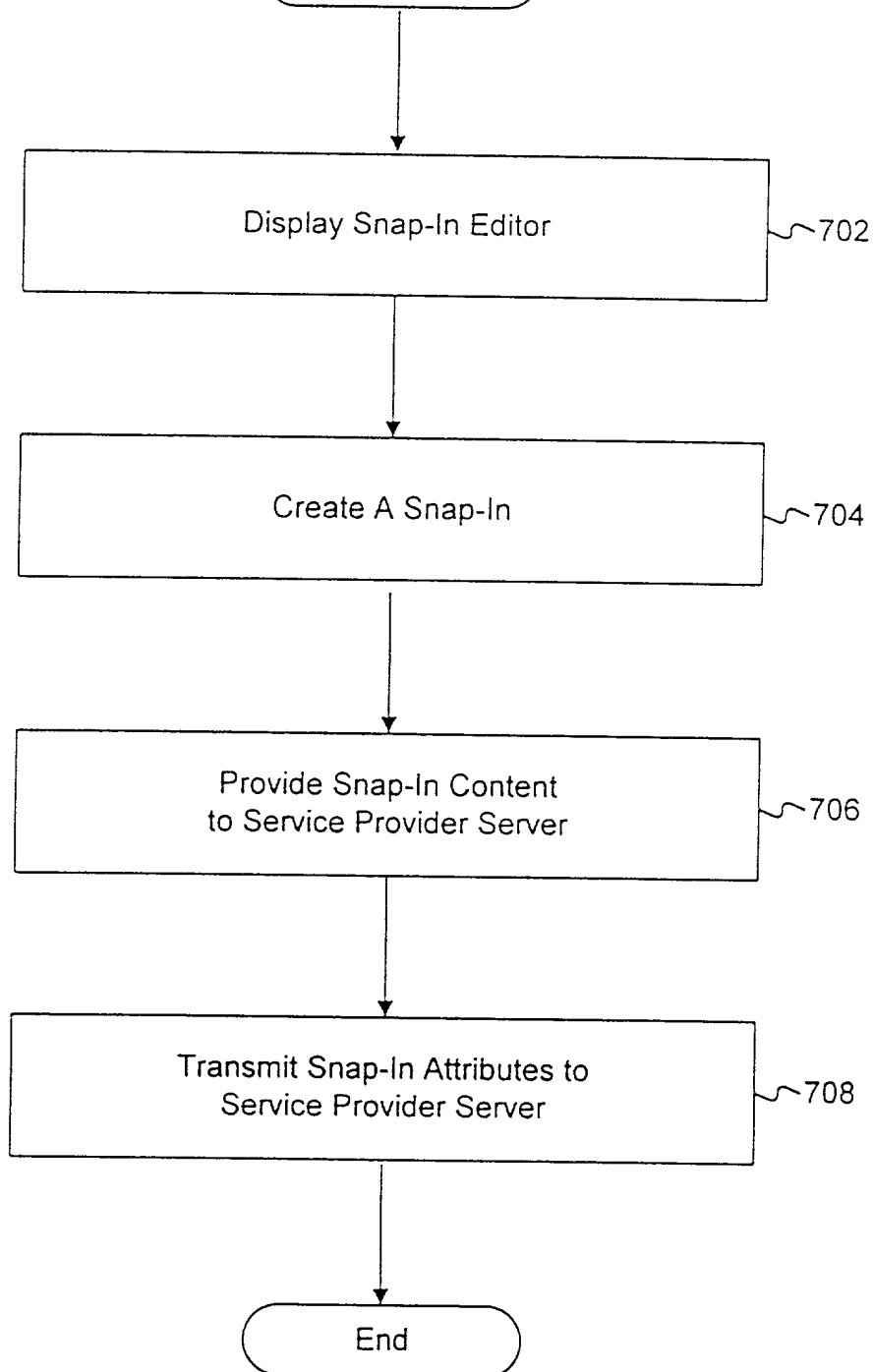


Fig. 7

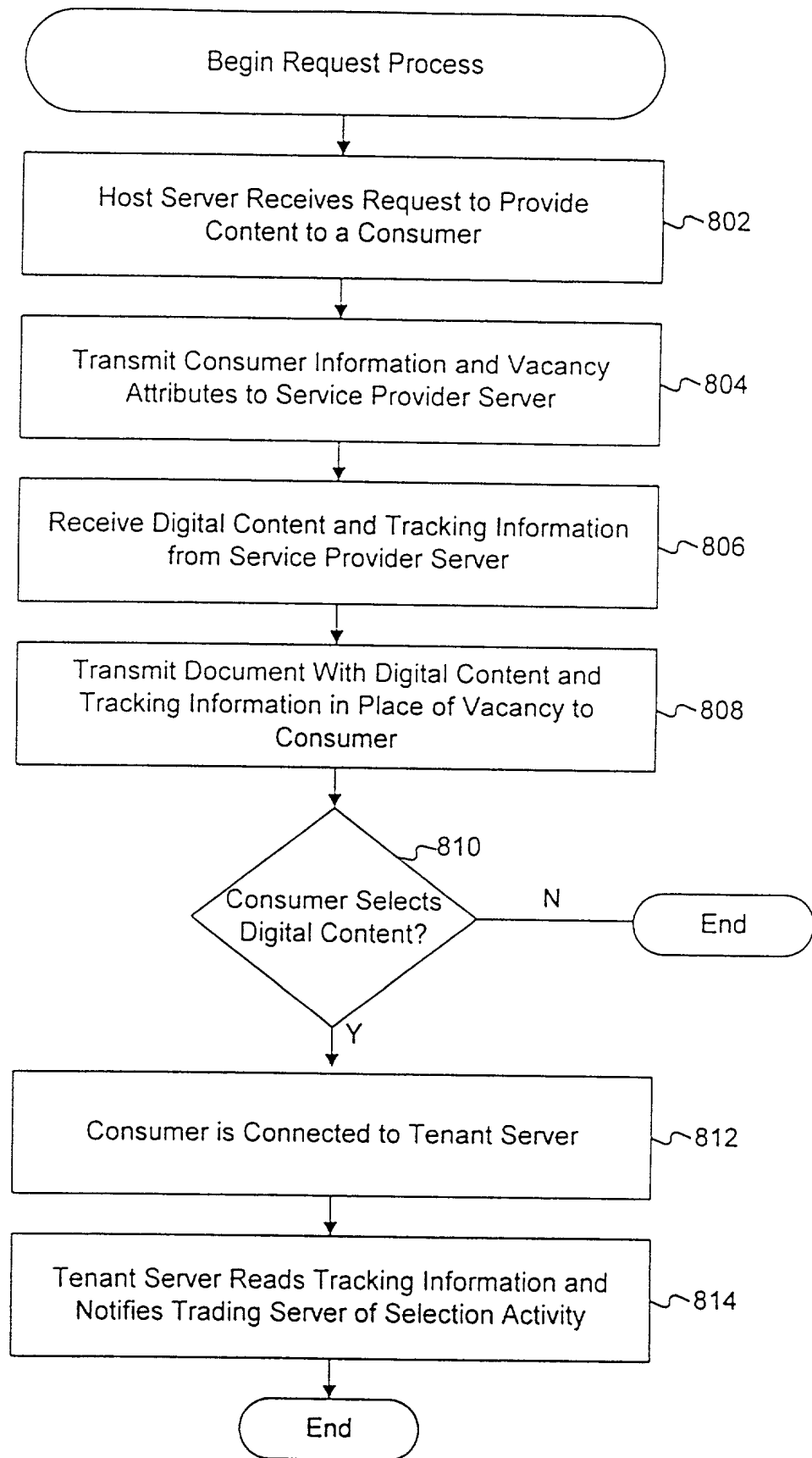


Fig. 8

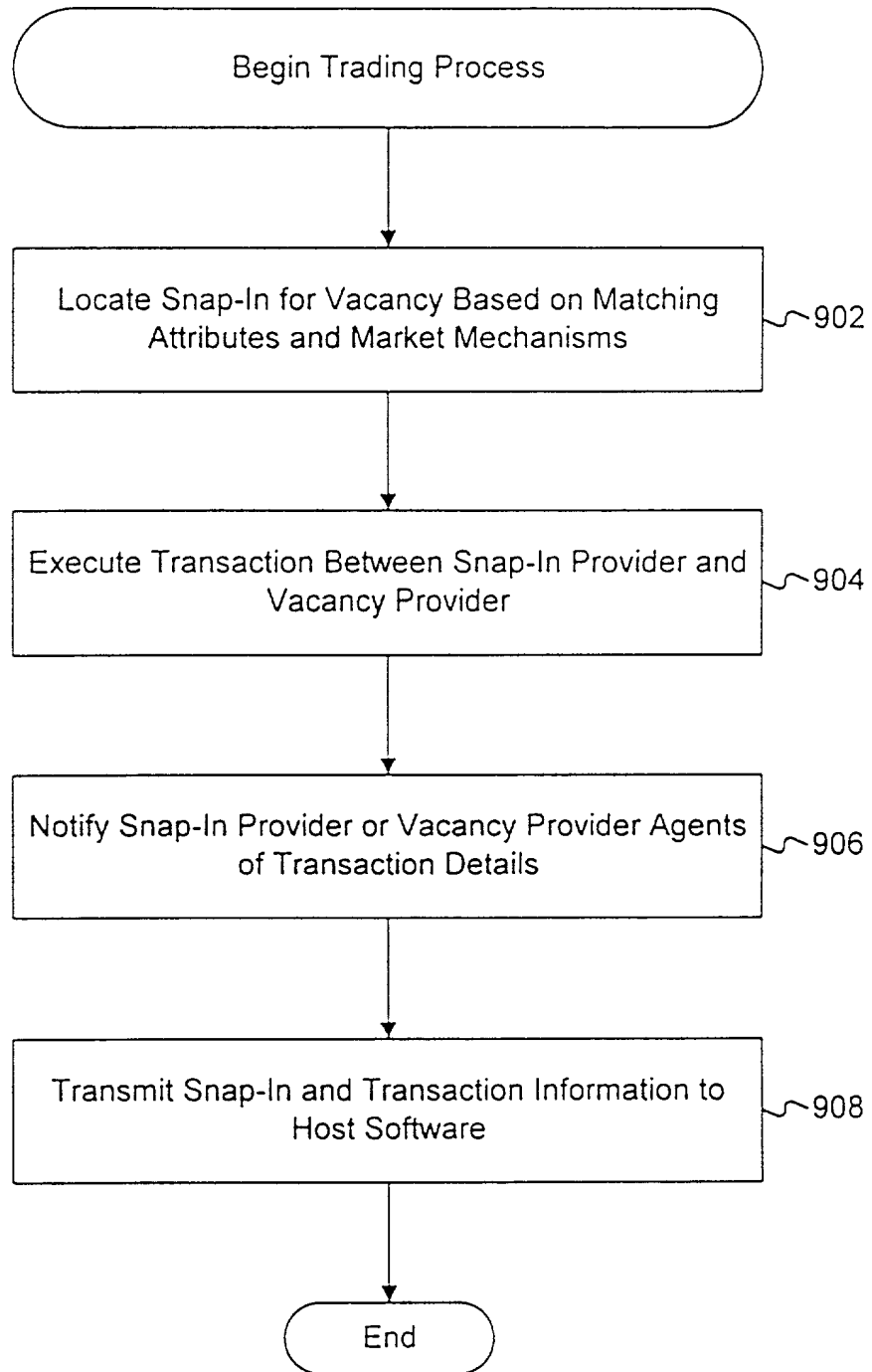


Fig. 9

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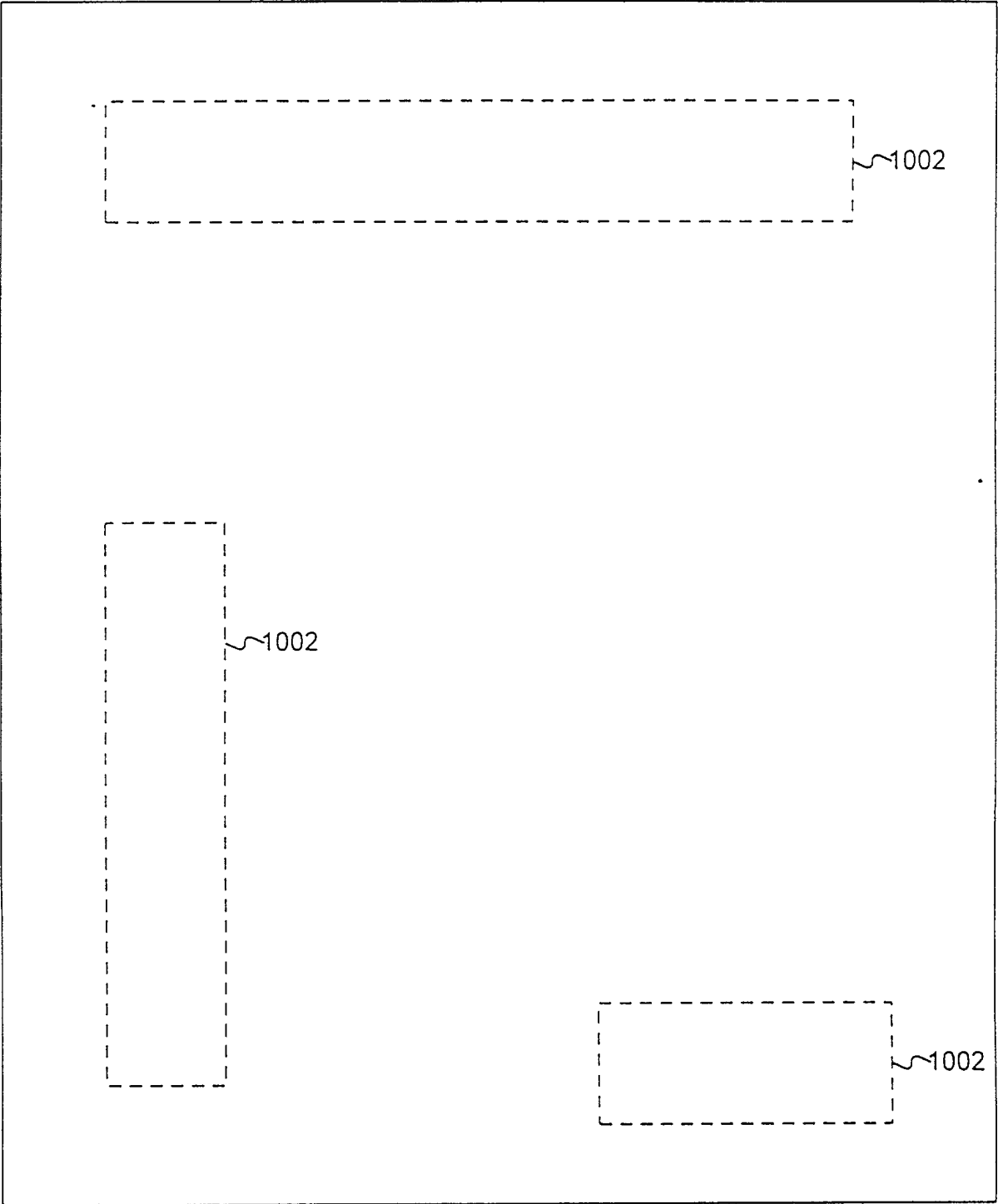
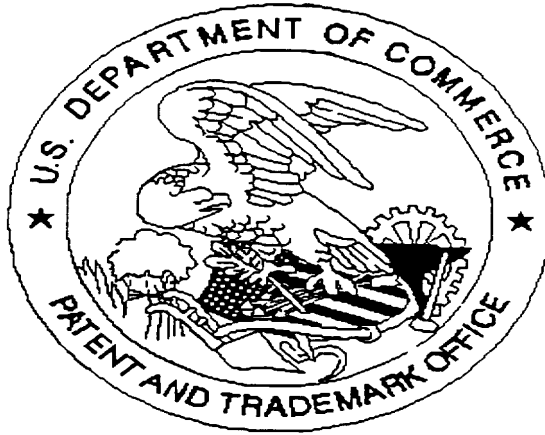


Fig. 10

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